

SIEMENS

MAMMOMAT 3000

SP

Service Instructions

Collimator

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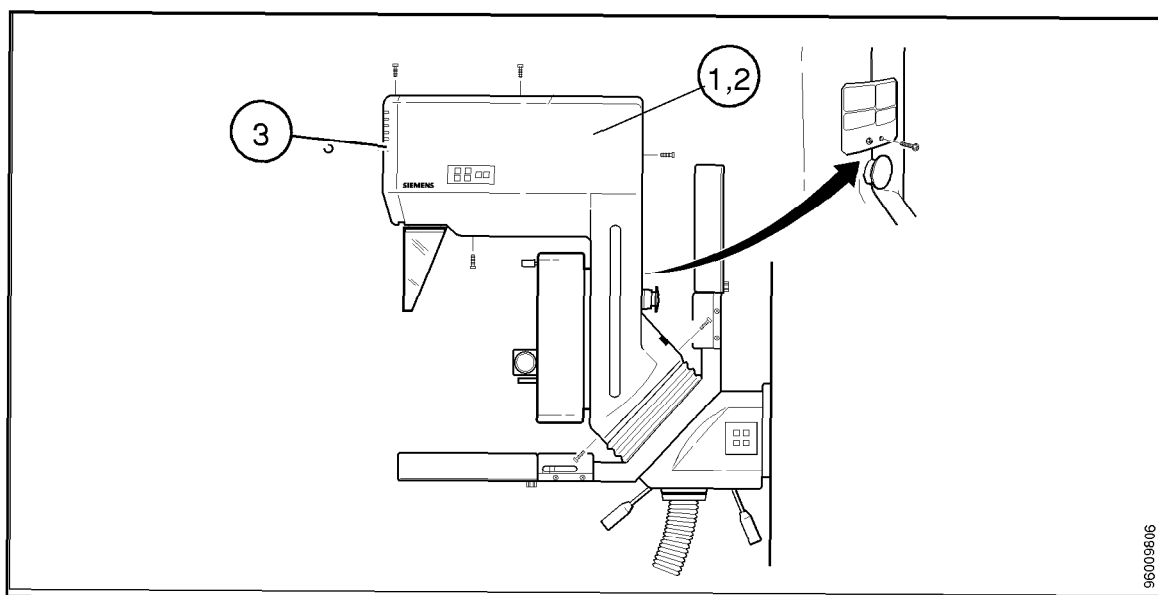


Fig. 1

Remove the swivel arm covers

- Switch off the system.
- Remove the screws from the X-ray tube covers at the front, as well as the left and right sides (1, 2 and 3/Fig. 1).

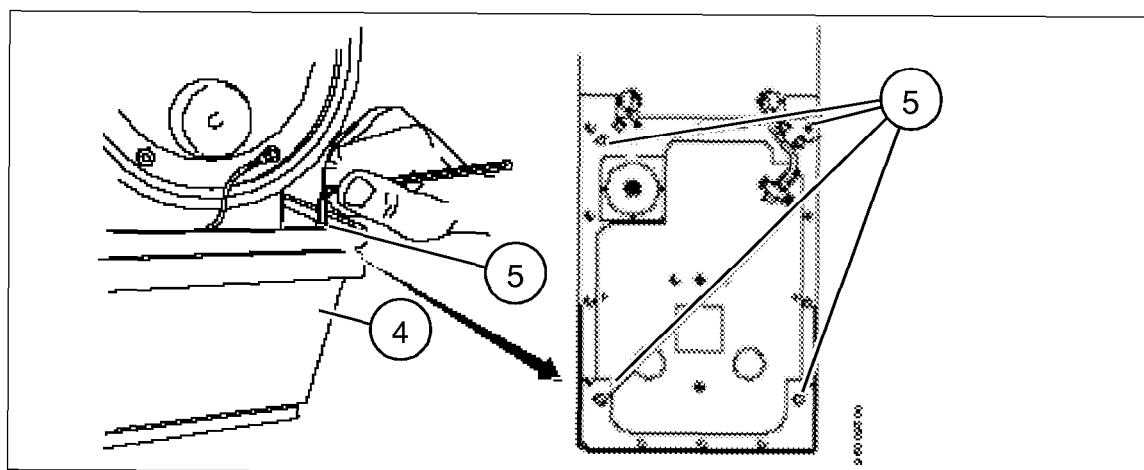


Fig. 2

Remove the collimator cover

- Remove the four screws 5/Fig. 2).

CAUTION

Remove the four screws shown in Fig. 2 only!

- Allow the cover to hang down (4/Fig.2) by the collimator cable and, if necessary, secure it to the swivel head with adhesive tape or cable ties.

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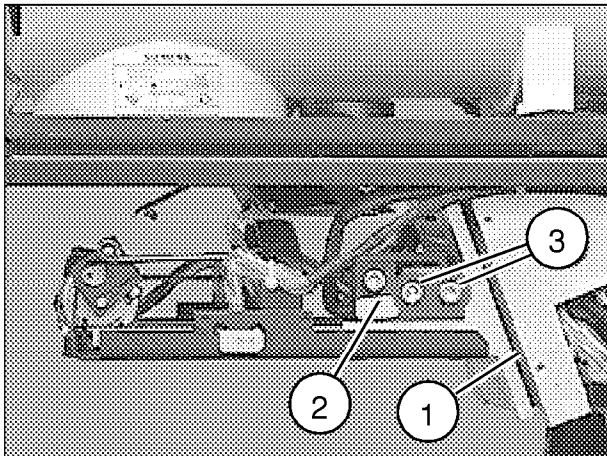


Fig. 1

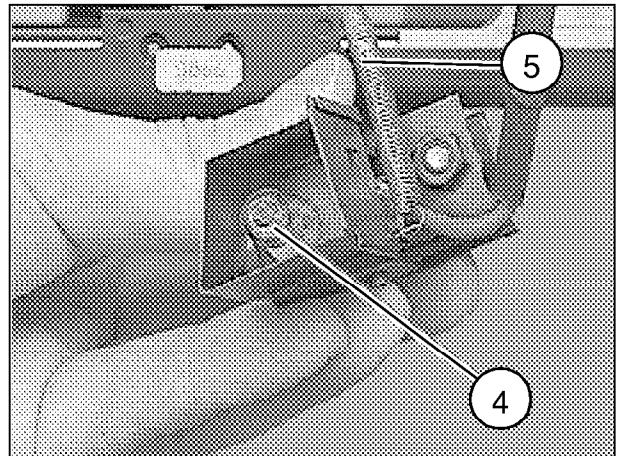


Fig. 2

Replacing the light localizer lamp or the lamp holder

- Remove the swivel arm and collimator covers.

Replacing the lamp

- Switch the system on.
- Select the Mo focus. The carriage (1/Fig.1) will move to the bottom.
- Switch the system off.
- Remove the two screws shown in (3/Fig.1).
- Remove the lamp holder as shown in (2/Fig.1, 1/Fig.2).

CAUTION

Be careful not to damage the filter disk!

- Replace the lamp (4/Fig.2).

CAUTION

**Do not touch the lamp with your fingers!
Wear gloves or use a soft cloth when replacing the lamp.**

Replacing the lamp holder (if necessary)

- Remove the springs (5/Fig.2).
- Unsolder the connection cable from the lamp holder.
- Remove the lamp from the old lamp holder and install it in the new one.

Closing the collimator

- Reinstall the lamp holder.
- Check the light field / radiation field as described in chapter 3.
- Reinstall all covers.

Replacing the mirror (including the drive mechanics)**General**

In some systems, it may happen that the mirror sporadically does not snap back into place after the exposure. If this is the case, the following procedure must be performed.

When a defective mirror (or the associated drive mechanics) must be replaced, proceed according to these instructions.

Required parts

Upgrade kit, complete 63 96 605 X041E

Mirror only 62 45 042 X 041E

Required documents

Update instructions "Replacing the mirror (including the drive mechanics)"
RXB7-230.092.05.02

Replacing the rotating magnet M7 (for the light localizer mirror)**General**

The preceding section describes the procedure for replacing the mirror including the drive mechanics.

This procedure should also be followed when replacing a defective rotating magnet (or the associated drive mechanics).

Required parts

Rotating magnet Item 62 46 842 X041E
No.

Required documents

Update instructions "Replacing the mirror (including the drive mechanics)" RXB7-230.092.05.02...

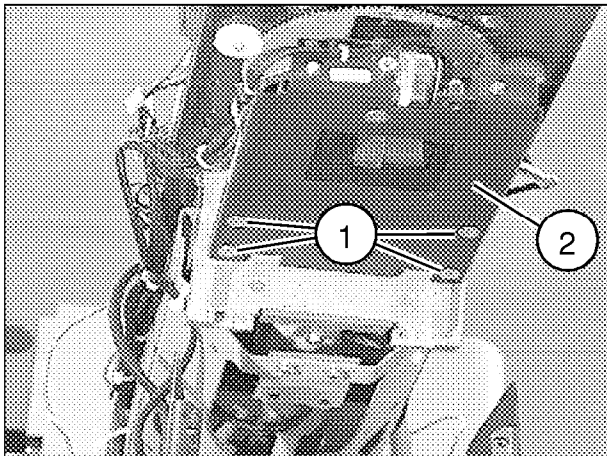


Fig. 3

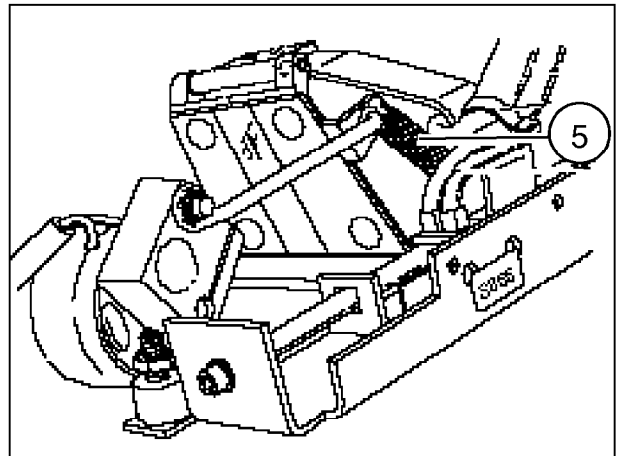


Fig. 4

Replacing the spring (for the mirror)

- Remove the swivel arm and collimator covers.
- Remove the 4 screws shown in (1/Fig.3).
- Carefully lower the collimator assembly (2/Fig.3).
- Replace the spring (5/Fig.4).
- Reattach the collimator assembly with the screws.
- Switch the system on.
- Switch on object illumination by actuating the footswitch (for compression)
 - ⇒ the mirror must correspondingly snap in or out when switching object illumination on or off.
- Check the coincidence of the light field / radiation field as described in chapter 3.
- Reattach all covers.

Replacing the filter disk

General

The following instructions describe how to replace the filter disk.

Required parts

Filter disk 64 20 694 X041E

Required documents

Repair instructions "Replacing the filter disk" RXB7-230.091.02.01...

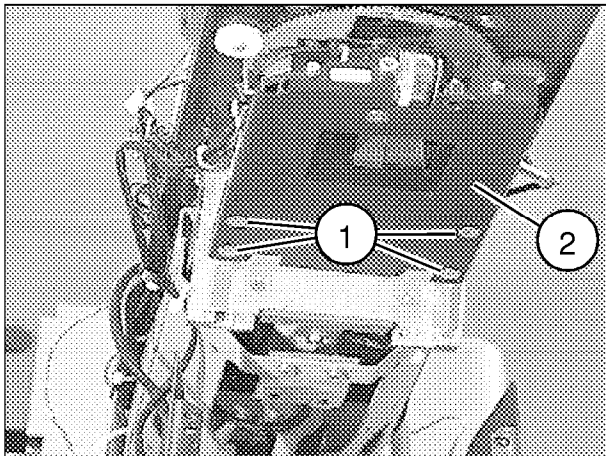


Fig. 5

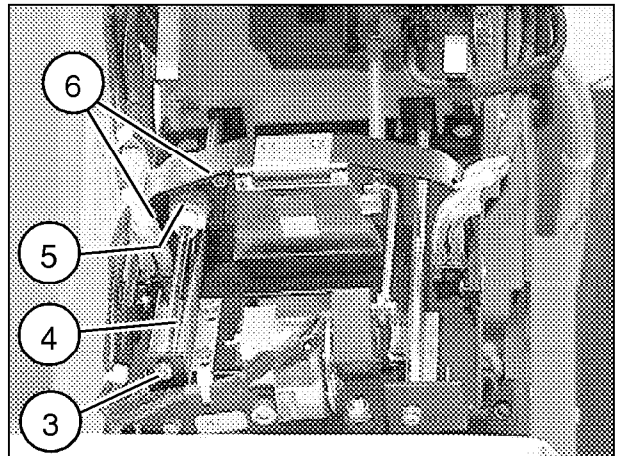


Fig. 6

Replacing the motor M4 (Format selection) and the light barriers S865 and S866

- Remove the covers from the swivel arm and the collimator.
- Remove the 4 screws (1/Fig. 5) from the collimator.
- Carefully lower the collimator unit.

Replacing the motor

- Remove connector X854 on D805.
- Remove the nut (3/Fig.6).
- Remove the motor (5/Fig.6) from the drive (4/Fig.6).
- Remove the 2 screws (6/Fig.6) and take out the old motor.
- Install the new motor.

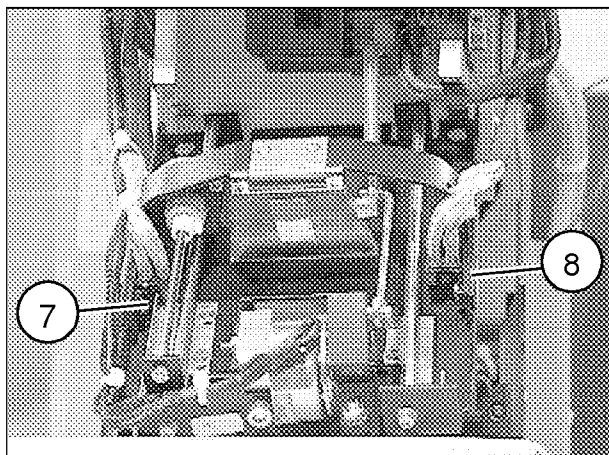


Fig. 7

Replacing light barriers S865 and S866

- Replace light barrier S865 (7/Fig.7).
- Replace light barrier S866 (8/Fig.7).
- Close the collimator.

Function test

- Alternately move each table 18x24 and 24x30 into the exposure position.
The beam limiting device must move freely and must shut off in the correct end positions.
- Check the position of the radiation field and the coincidence of light and radiation fields according to the procedure described in chapter 3. If necessary, adjust them.
- Reinstall all covers.

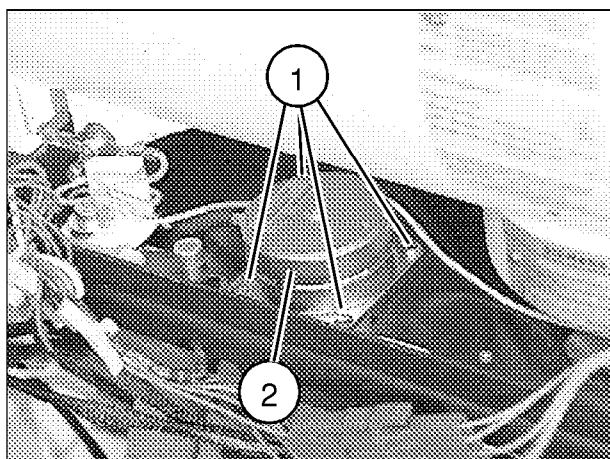


Fig. 8

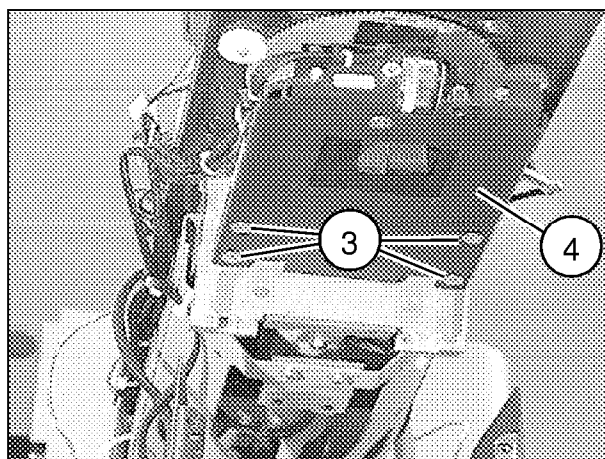


Fig. 9

Replacing the motor M5 (Filter selection) and the light barriers S867

- Remove the swivel arm and collimator covers.

Replacing the motor

- Remove connector X867 on D805.
- Remove the 4 screws shown in (1/Fig. 8) (if necessary, remove the screws from the X-ray tube and lift it up).
- Take the old motor out (2/Fig.8).
- Install the new motor using the reverse procedure and connect it.
- Check that the filter rotates easily. If necessary, adjust the position of the motor.
- Secure the motor by tightening the screws.

Replacing light barrier S867

- Remove the 4 screws (3/Fig.9) on the collimator.
- Carefully lower the collimator (4/Fig.9) (this improves access to the light barrier).

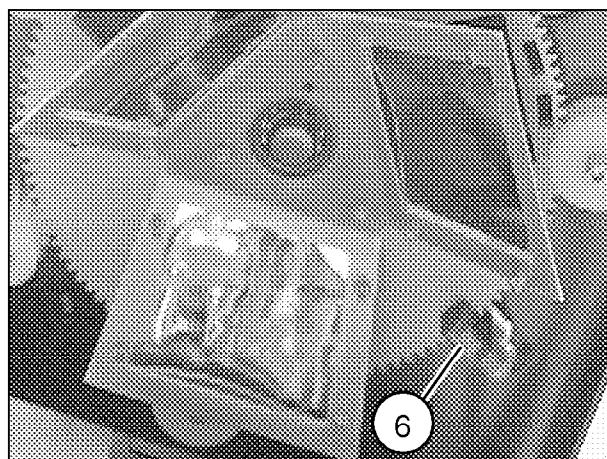
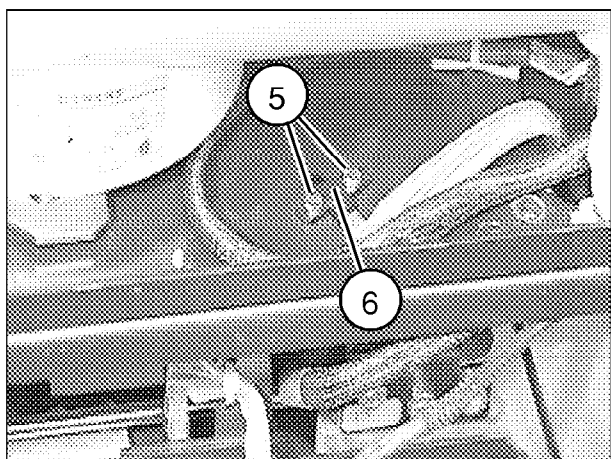


Fig. 10

- Remove the 2 screws as shown in (5/Fig.10).
- Replace light barrier S867 (6/Fig.10).
- Reattach the collimator.

Function test

- Select each filter consecutively on the control panel. The filter disk must stop in the exact positions, respectively.
- Reattach all covers.

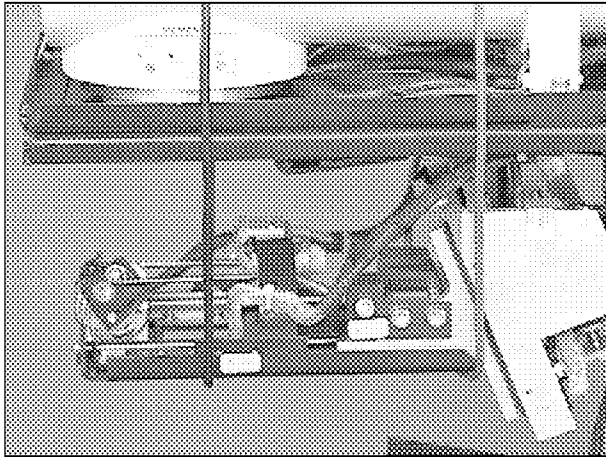


Fig. 11

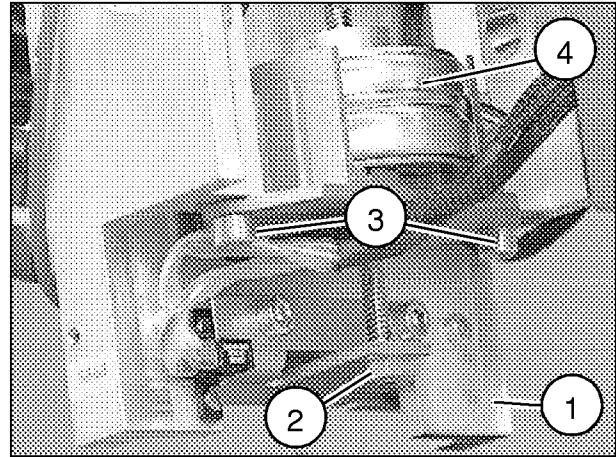


Fig. 12

Replacing the motor M6 (Focus correction)

- Remove the swivel arm and collimator covers.

Removing the focus correction device

- Secure the focus correction device according to Fig.11 (e.g. with cable ties)
- Loosen the 4 screws of the focus correction device, remove it and allow it to hang down by the cable ties.

Replacing the motor

- Remove connector X879 on D805 and secure the carriage (1/Fig.12).
- Remove the nut (2/Fig.12) and the 2 screws (3/Fig.12).
- Remove the old motor (4/Fig.12). Install the new motor using the reverse procedure and connect it.
- Reattach the focus correction device.

Perform a function test

- Switch the system on and select all four foci consecutively.
(To switch to the small focus, insert the magnification table.)
Check that the focus correction device travels smoothly.
- Check the size and position of the radiation field as described in chapter 3.
- Correction procedure:
 - connect the service PC.
 - Using the module "Configuration Beam limiting device" slightly change the size of the radiation field.

CAUTION

This will influence the position of the radiation field.

- Switch the system off and reattach all covers.

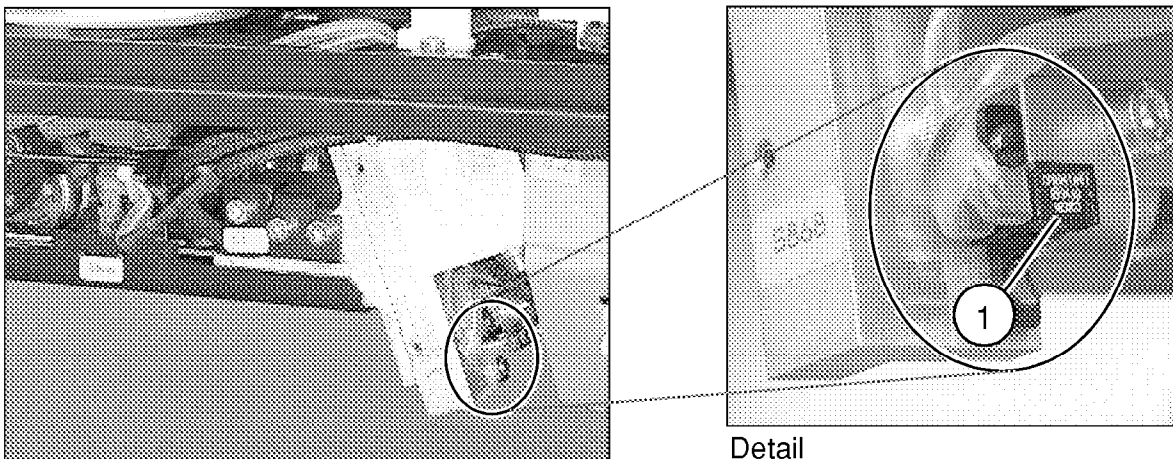


Fig. 13

Replacing light barrier S868 (Focus correction)

Preliminary steps

- Remove the swivel arm and collimator covers.
- Switch the system on.
- Select the Mo focus.
- Select the small focus (insert the magnification table).
- Switch the system off.

Replacing the light barrier

- Replace light barrier S868 (1/Fig.13).

Perform a function test

- Switch the system on.
- Select all four foci consecutively (to switch to the small focus, insert the magnification table)
- Check the size and position of the radiation field as described in chapter 3.
- Correction suggestion:
 - Connect the service PC.
 - Using the module "Configuration/Beam limiting device", slightly change the size of the radiation field.

CAUTION

This will influence the position of the radiation field.

- Switch the system off.
- Reattach all covers.

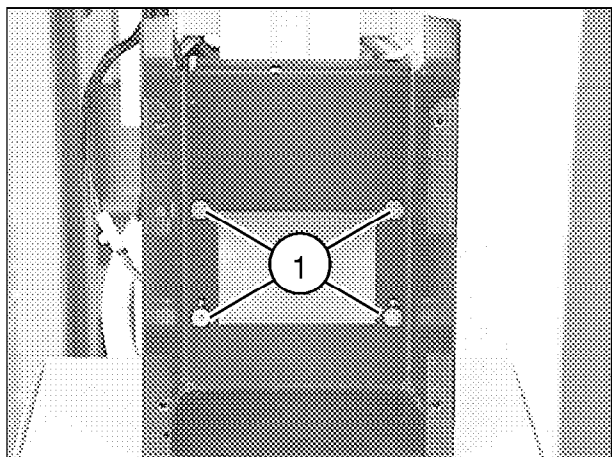


Fig. 14

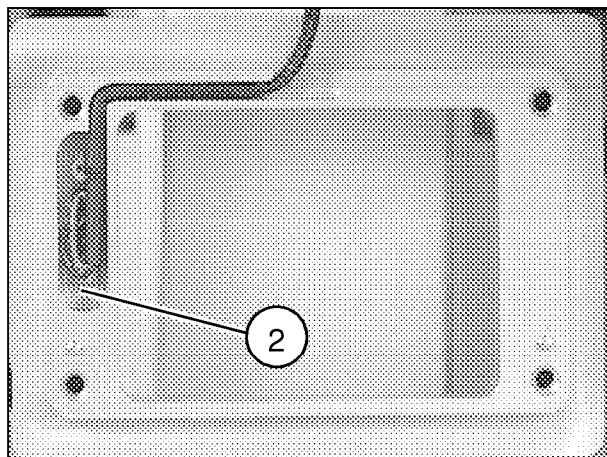


Fig. 15

Replacing the microswitch

- Remove the swivel arm and collimator covers.
- Remove the four screws (1/Fig.14) at the inside of the collimator cover.
- Remove the holder.
- Replace the switch (2/Fig.15).
- Reassemble the collimator cover.
- Reattach all covers.

Retrofit: Larger radiation field

General

Many customers would like the entire film to be exposed. There is an upgrade kit available for the corresponding change required to the collimator.

Required parts

Retrofit kit 63 96 985 X041E

Required documents

Installation instructions "Larger radiation field " RXB7-230.031.03.01....

Reference to legal regulations

Depending on local regulations, a partial test for the position of the radiation field, as well as the coincidence of light and radiation fields may be required.

The results must be documented in the corresponding protocols.

Checking the light field / radiation field limitation

Adjustment and radiation field limitation

General

- The nominal radiation field width is 248 mm for the 18 cm x 24 cm format and 308 mm for the 24 cm x 30 cm format.
- The radiation field may not exceed the front edge of the film marking device (6/Fig.1).
- On the side close to the chest wall, the radiation field may not exceed the film edge by more than 9.5 mm.
- The light and radiation fields must be within the following tolerances:

left edge:	right edge:	back edge:	front edge:
+/- 6.5 mm	+/- 6.5 mm	+/- 6.5 mm	+/- 6.5 mm

Measurement procedure

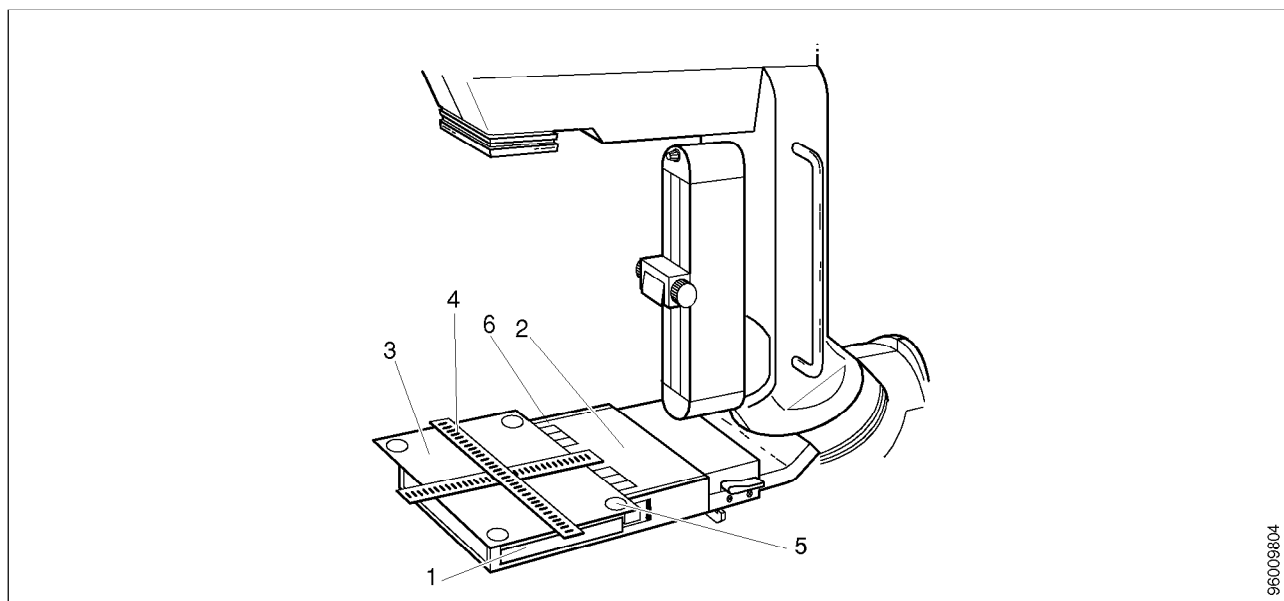


Fig. 1

- Insert a film packet, centering it in the cassette (1/Fig.1).
- Insert the cassette (1/Fig.18) in the object table (2/Fig.1).
- Place the film bag on the object table (3/Fig.1). It must extend a minimum of 10 mm beyond the edge of the chest wall.
If there is no film bag available, two film cassettes may be placed next to each other on the object table.
- Place the centering cross (4/Fig.1) on the film bag or on the cassettes.
- Switch on the light localizer and mark the edges of the light field with four washers (e.g. coins) (5/Fig.1). Record the distance of the centering cross (scale values) to the side edges of the object table and the front edge of the film marking device (6/Fig.1).
- Release radiation (Mo/Mo) and develop the film.



Evaluation

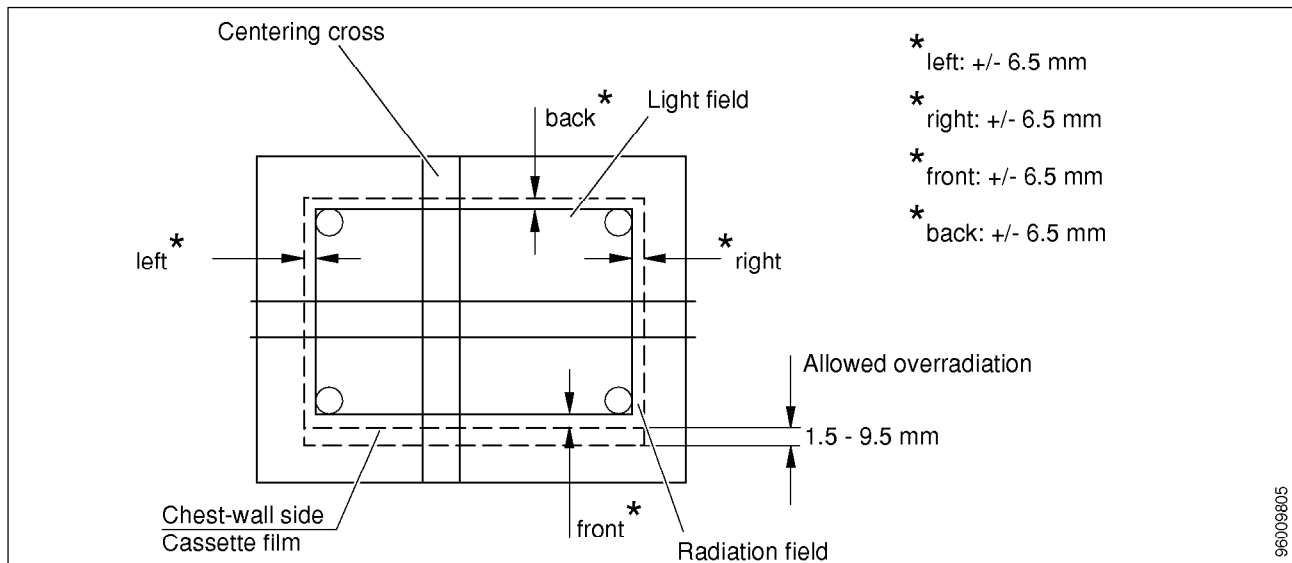


Fig. 2

Coincidence of light and radiation fields

Evaluation of the film in the film bag:

- Draw the position of the light field by connecting the outer edges of the coin markings as shown in Fig. 2.
- Compare the outer edges of the light field with those of the radiation field.
- The maximum deviation between the radiation field and the light field may not exceed 6.5 mm on any one side.

Radiation field limitation

Compare the film from the cassette with the one from the film bag using the scale on the centering cross:

- The cassette film must be completely exposed on the side opposite the chest wall. However, the radiation field must not extend beyond the front edge of the film marking device.
- The overexposure on the chest wall side must fall between a minimum of 1.5 mm and a maximum of 9.5 mm.
- The radiation field must not extend over the side edges of the object table.
- The distance to the edges must be at least 7 mm.
To check this, compare the scale values of the film from the film bag with the values recorded on page 19.

Refer to the next page for correction procedures.

- **Repeat the test with all object tables and both format selectors (basic tables).**

Correction

The light field can be adjusted in the horizontal direction (X-direction) with the adjustment screw shown in (1/Fig.3).

The light field can be adjusted in the Y-direction with the screw shown in (2/Fig.3)

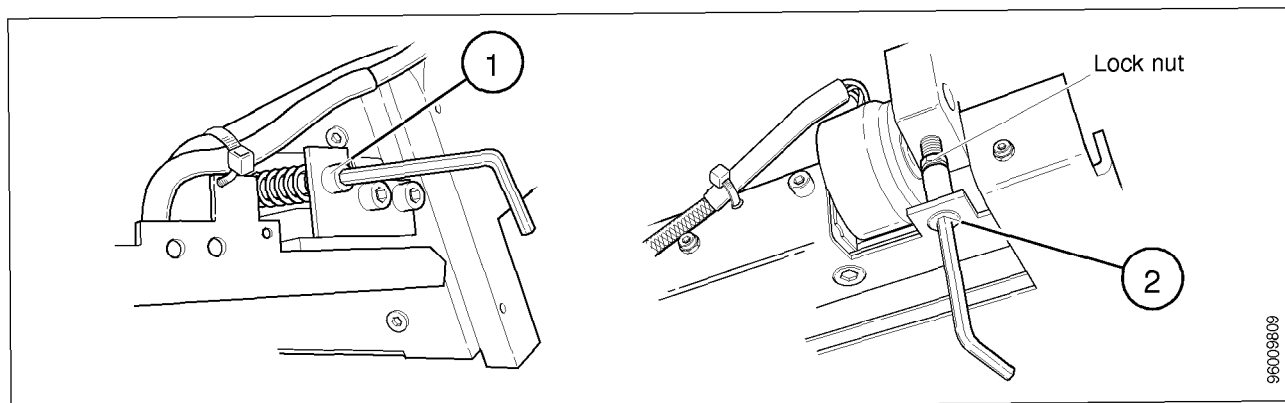


Fig. 3

Adjust the radiation field as follows:

- Loosen the screws (2,3/Fig. 4) on both sides of the collimator.
- Adjust the radiation field in the chest wall / stand wall direction (Y-direction) by shifting the collimator.

If a horizontal adjustment is necessary, refer to *Speed Info RX 168-95 (Update kit 63 82 886)*.

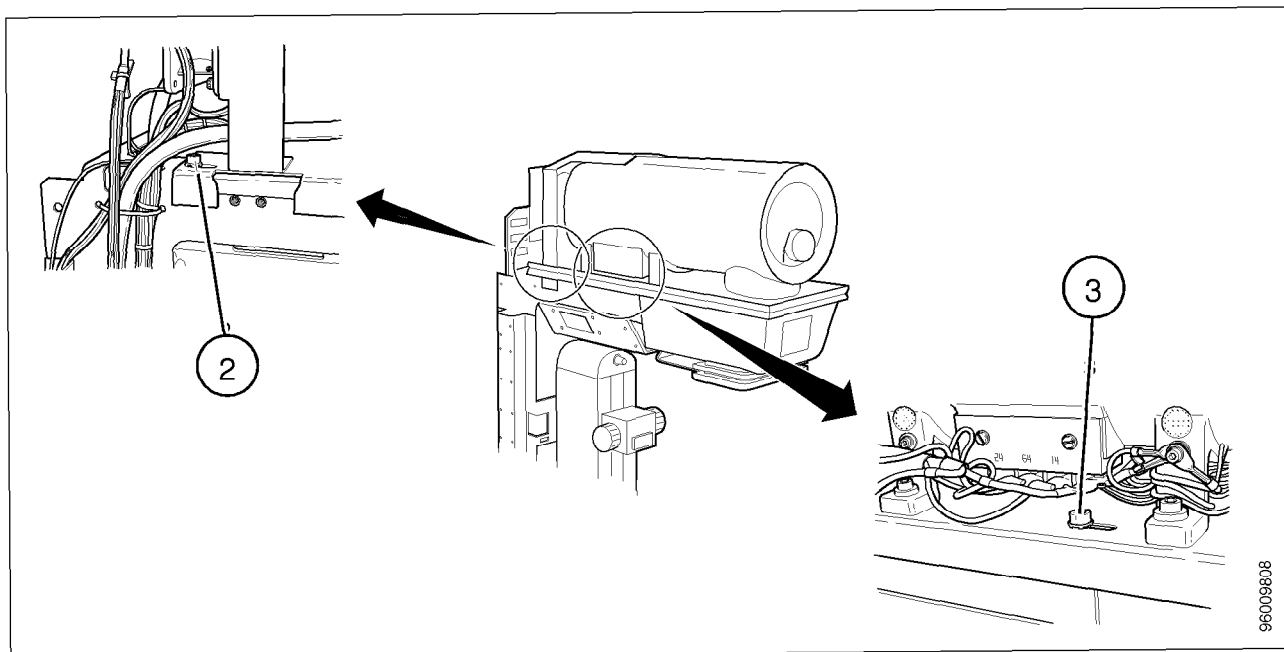


Fig. 4

Final steps

- Reattach the collimator and X-ray tube covers.
- Complete the test protocol (if required), e. g. radiation field limitation check.

Update for adjusting the position of the radiation field

General

- The following Update Instructions describe how to adjust the position of the radiation field only.
- The size of the field cannot be adjusted.
- If the customer wishes to have a larger radiation field, the complete format selection system must be replaced, as previously described.

NOTICE

On some systems, collimation is not symmetrical even with the CC (cranio/caudal) beam.

- An upgrade kit is available which allows this to be readjusted in the field (Item No. 63 82 886 X041E). This kit contains instructions in English and auxiliary measurement devices for centering the radiation field.
- The main modification is the enlargement of the holes for the collimator holder.

The parts can be used for all affected units in your region.

Required parts

Update kit Item No. 63 82 886 X041E

Required documents

Update Instructions "Collimator holder" RXB7-230.092.01.01.....

TD SP 2 / Guggenmoss

TD SP 1 / Schlee

SMS Iselin / O'Donnell

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